



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,930	11/14/2003	Masami Niimi	117793	7431
25944	7590	06/15/2004		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER NGUYEN, TRAN N	
			ART UNIT 2834	PAPER NUMBER

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

10/706,930

Applicant(s)

NIIMI ET AL.

Examin r

Tran N. Nguyen

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,2 and 4-7 is/are rejected.
- 7) ☐ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Claim Objections*

2. Claim 1 is objected to because of the following formalities:

The recitation “*a thickness thereof in the axial direction gradually increases along the direction in which it extends*” should be changed to “*an axial thickness of said rear end portion of the outer conductor segment gradually increases along said substantially perpendicular direction to the axial direction*”

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 2, 4, 6-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Katoh** (US 5,864,193).

**Katoh** discloses rotor of a rotary electric machine, the rotor (figs 1) comprising:

a center shaft (510) rotatably supported in a housing of the rotary electric machine;  
a cylindrical armature core (520) fixed the center shaft, the armature core having a plurality of slots formed therein;

Art Unit: 2834

a plurality of inner conductor segments (532), each having an in-slot portion disposed in an inner portion of the slots a rear end portion disposed at armature core, and a front end portion disposed at front side of the armature core;

a plurality of outer conductor segments (534), each having an in-slot portion disposed in an outer portion of rear side of the slot, armature core, and front end portion disposed at front side of the armature core, wherein:

an armature coil is formed by electrically rear end portion disposed at a rear side of the connecting the inner conductor segments and the outer conductor segments in a predetermined manner; and,

at least the rear end portion of the outer conductor segment extends a direction substantially perpendicular to an axial direction of the center shaft; and,

the outer conductor segment is formed from a conductor wire having a rectangular cross-section; and the rear end portion is bent from the in-slot portion at a thin portion formed between the in-slot portion and the rear end portion (figs 16A-17D); and,

the rear end portion of the inner conductor segment includes a projected portion (539) extending in the axial direction; and a tip of the rear end portion of the outer conductor segment is electrically connected to a side of the projected portion (figs 19-20).

Katoh substantially discloses the claimed invention, except for the limitations of the following:

(a) a thickness thereof in the axial direction gradually increases along the direction in which extends;

(b) the rear end portions form a slanted commutator surface relative to a plane perpendicular to the axial direction.

Those skilled in the art would understand that Katoh discloses the detailed structure of the rotor's outer conductors with their rear end portions being bent to serve as the commutator

Art Unit: 2834

surfaces for the brush to slidably contact. The essential structure and features of rear end portions of the outer conductors forming commutator surface are disclosed. Thus, an artisan would have the necessary mechanical skills in the art to modify the shape of the rear end portions in order to improve efficiency of the rotor. Such modification in size or shape is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955) (emphasis added).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the rotor by configuring the outer conductor segments with respective rear end portions having an axial thickness gradually increases along the radial direction, and the rear end portions form a slanted commutator surface relative to a plane perpendicular to the axial direction, as recited in the claimed invention. Doing so would enhance the rotor performance efficiency such modification in size or shape is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955) (emphasis added).

Art Unit: 2834

4. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Katoh**, as applied in the rejection against the base claim, in view of **Hasebe et al (US 5,889,342)**

The Katoh ref discloses the claimed invention, except for the added limitations of the rotor core having through holes for cooling circulation.

Hasebe, however, teaches a rotor core having a plurality of through holes (32a-32b) being positioned at radially inside the cylinder core for circulating cooling to reduce thermal heat generated by the rotor and its components.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the rotor by configuring the rotor core with through holes radially insides the rotor core, as taught by Hasebe. Doing so would provide means to enable cooling circulation therein for reducing thermal heat generated by the rotor and its components, i.e., the inner and outer conductor segments.

#### ***Allowable Subject Matter***

**Claim 3** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

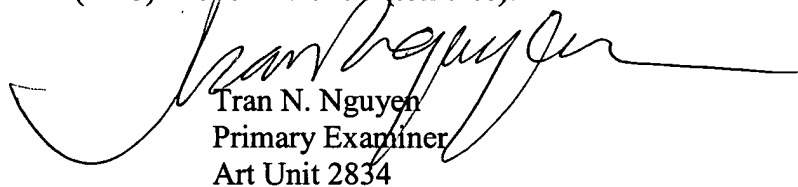
#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran N. Nguyen whose telephone number is (571) 272-2030. The examiner can normally be reached on M-F 7:00AM-4:00PM.

Art Unit: 2834

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571)-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tran N. Nguyen  
Primary Examiner  
Art Unit 2834